

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

OF THE SUPERINTENDENT

Copy from

FILE 143

MONTHLY REPORT

for

O c t o b e r,

1919.



DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

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E OF THE SUPERINTENDENT

November 8, 1919.

Dear Sir:

The following is my report on conditions in Yellowstone National Park and on the operation of the park for the month of October, 1919:

GENERAL CONDITIONS:

The most unusual weather conditions of which there are record prevailed. The month as a whole was one of unusual severity, and greater departures from the normal conditions with regard to temperature and snowfall have not been recorded for any month of the year since the beginning of the record in 1887. The lowest temperature was 6 degrees below zero, which is lower than for any previous October except that of 1887, when the cooperative observer at Fort Yellowstone recorded 20 degrees below zero. Except for two brief periods of one and two days respectively, the temperature was consistently below normal throughout the month and the accumulated deficiency in temperature increased as the month advanced, resulting in an average daily deficiency of 11.1 degrees. Comparison indicates that this departure from normal temperature not only is greater than any previous October of record, but is a greater departure than any other single month on record. The lowest mean temperature for October previously recorded since 1887 was 35 in 1916. The greatest departure from normal for any single month previous to this October, was minus 10 in March, 1917. Midwinter conditions prevailed during the latter half of the month with below zero temperatures on several days and with almost daily snowstorms. The storm of the 22-23, which yielded 15.0 inches of snow was not only unprecedented for the month of October, but with the exception of January 17, 1895, when 16.0 inches of snow were recorded, it is the greatest amount of snowfall for any one storm in 32 years' record, while the total for the month, 26.6 inches, is nearly 20 per cent greater than the normal for January, the month of heaviest snowfall. The total precipitation reduced to water was 2.67 inches, which is 1.53 inches, or more than double, than normal.

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snow fell 11 days in October, being unequalled but one October since 1904, namely 1916. The wind movement was about the average for October, but the maximum velocity of 42 miles from the south on the 8th was not exceeded but once since the Weather Bureau was established here in 1903. The sunshine was only 34 per cent of the possible, it being the least in the October record, and about 60 per cent of the normal amount. There were 20 cloudy days, the greatest number of which there is record for the month. The extremes occurred mostly after the middle of the month, since which time the conditions in general have been practically those of midwinter rather than late fall. A copy of the Monthly Meteorological Summary is inclosed herewith.

Travel.

All roads were passable up to October 22, but travel was light and consisted principally of concessioners making improvements to camps, hotels, stores, etc., in the upper park. A few tourists passing close to the park took advantage of the opportunity to see all or a part of it, and there were a few hunting parties en route to Jackson Hole, Wyoming, or Henry's Lake, Idaho, who were permitted to pass through with their own automobiles, sealed firearms and trophies, this being their nearest route and sometimes the only thoroughfare.

The very heavy snowstorm that fell October 22 and 23 left 15 inches of snow on the ground at Headquarters, 18 inches at Norris, 24 inches at Soda Butte, 28 inches at Tower Falls, and 36 inches at Cooke City. The use of trucks had to be abandoned as impracticable, and sleighs substituted in place of them. Our own service, as well as most concessioners, had trucks stalled in the snow on the roads to Lake and Tower Falls, and it was with great inconvenience and expense that they were brought back to Headquarters for the winter. We were forced to send the 75-horse power Holtz caterpillar tractor to Tower Falls to bring in four of our trucks which could not travel through so much snow, and the trip took about a week. To this date the snow has settled somewhat, but is still too deep in the park to permit the use of trucks, and sleighs are still in use for hauling to Canyon, Lake, and Cooke City. The road between Gardiner and Headquarters has not been closed to motor traffic, as there was enough travel to keep it open in spite of the snow, though sleighing also was good and sleighs have been used to some extent for heavy freighting. At the present writing, this is the only road

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in the park passable for motor traffic.

On October 13 verbal orders were issued to entrance stations to permit no one to enter except on special permit, and notice was given to stations ahead when permits were issued, so a careful watch could be kept of parties entering who might be disposed to hunt or commit depredations in the park.

Storms beginning October 8 made the roads muddy, and on October 15 the parties holding permits to haul freight between Gardiner and Cooke through the park, were notified that they would not be permitted to travel over certain parts of the road which were specially soft, except when the ground was frozen. Soon after this order went into effect, however, the heavy snows came on making travel with trucks out of the question.

Labor and supply markets.

Beginning about October 1 steps were in progress to discontinue most of the active field work for the season, due to uncertain weather and depletion of funds, therefore there was no demand for hire of labor or purchase of supplies during the month. The Hotel Company, the Camping Company, both of the general stores, and the Park Curio Shop, however, were just beginning extensive repairs and improvements as mentioned in another part of this report, and they employed all of our surplus mechanics and laborers who were willing to remain in the park longer, at good wages, and had to go outside to find enough for their use. They report the price of building material as excessive, which with the present high price for labor makes building very expensive at the present time.

II. PERSONNEL.

Employees.

On October 1 there were 208 employees on our rolls; on October 31 there were 70. Below is given a list of the numbers of various classes of employees serving under appointment, with general statement of the kind of work performed by each class:

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No.	Class.	Kind of work performed.
	YELLOWSTONE NATIONAL PARK	
1	Asst. Engineer	In charge of section of road work. (1 was furloughed on 21st and 1 laid off on 24th) Also office engineering.
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2	Blacksmiths	General blacksmithing work.
5	Clerks	1 Disbursing agent and purchasing clerk; 1 on orders, proposals and vouchers, 1 stenographer, files and revenues; 1 on pay rolls and time-keeping; 1 on cost accounting and in charge of storehouse.
3	Electricians	1 in charge of power plant; 2 assistants in power plant.
1	Buffalo Herder	Work with tame buffalo herd.
1	Buffalo Keeper	In charge of tame buffalo herd.
3	Foremen	1 in charge of all engineering work in park under direction of Superintendent; 1 in charge of stables; 1 in charge of construction crew.
1	Handyman	Work in commissary, rationing crews, etc.
1	Lineman	In charge of telephone system; did emergency work and installed instruments.
1	Master Mechanic	In charge of shops.
2	Mechanics	1 in charge of auto and truck repair shop; 1 repairing and driving trucks.
1	Plumber	In charge of general plumbing at Headquarters.
1	Telegraph operator	Telegraph operator and general office work.

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No.	Class.	YELLOWSTONE NATIONAL PARK, WYO. performed.
27	Rangers	In charge of different stations; on duty in Chief Ranger's Office; patrol duty; assisting rangers in charge of stations; feeding elk, etc.
1	Painter	In charge of general painting work at Headquarters.
1	Steward & Master of Transpn.	In charge of all transportation.
1	Engineman	Driving caterpillar tractor.

Some of the above employees were carried only a portion of the month.

In addition to the regular employees mentioned above, the following list of temporary laborers, teamsters, etc., were employed:

	On Oct. 1.	On Oct. 31.
Truck drivers	10	4
Laborers	125	3
Teamsters	39	2
Special laborers	26	2
Carpenters	5	3
Cooks	12	--
Walters	6	--
Gas engine man	1	1
	<u>224</u>	<u>15</u>

Leaves of absence.

During October annual leave was granted as follows:

W. H. Pendell, clerk, 1 to 4, inclusive; 4 days.
 R. L. Shultz, telephone switchboard operator,
 5 to 7, inclusive; 4 days.
 F. J. Townsend, park ranger, 1 to 2, inclusive;
 2 days.
 E. A. Allan, lineman, 13 to 16 at noon, inclusive;
 3½ days.
 Hans Larsen, watchman, 11 to 17, inclusive; 6
 days.

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E OF SUPERVISOR J. B. Small, general foreman, 10 to 31, inclusive;
17 days.

C. H. Conrick, assistant engineer, 10 to 11; 16
to 21, inclusive; 7 days.

W. J. O'Laughlin, blacksmith, noon 15 to 15;
one-half day.

Robert L. Filtzer, assistant engineer, 17 to 24,
inclusive; 7 days.

J. P. Bower, clerk, 16 (noon) to 25, inclusive;
8½ days.

A. C. Neumann, painter, 11 to noon of 21, inclusive;
8½ days.

Clarence O. Lauer, clerk, 18 to 18; 1 day.

E. F. Cushman, park ranger, 16 to 23, inclusive;
7 days.

Earl S. Bowman, park ranger, 28 to 29, inclusive;
2 days.

Appointments and promotions.

The following appointments became effective during
the month of October.

M. F. Skinner, park ranger, \$100 per month, effective Oct. 1.			
Earl S. Bowman, park ranger, \$1200 annum,	"	"	1.
Frank L. Plumlee, blacksmith, \$1200 annum,	2	"	7.

Separations.

The following separations took effect during October:

R. E. Driscoll, foreman, close of October 4.
George L. Henderson, foreman, close of October 5.
J. W. Eline, park ranger, close of October 5.
John A. Evans, foreman, close of October 10.
Vincent C. Conohan, foreman, close of October 11.
Hans Larsen, watchman, close of October 17.
William H. Ferrell, foreman, close of October 17.
Deate T. White, foreman, close of October 20.
Clair H. Conrick, assistant engineer, close of October 21.
E. F. Cushman, park ranger, close of October 23.
Robert L. Filtzer, assistant engineer, close of October 24.
Jacob P. Bower, clerk, close of October 25.
Nellie Roach, telephone switchboard operator, close of Oct. 31.
William J. O'Laughlin blacksmith, close of October 31.
Dorsey R. Sherman, gas engine man, close of October 31.
Edward W. McLennon, chauffeur, close of October 31.
George E. Owen, park ranger, close of October 29.

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REPORT OF SUPERVISOR Ralph V. Harr, buffalo herder, October 31.

Vacancies.

The following vacancies existed at the close of the month:

- 1 Chief Ranger.
- 1 Assistant Buffalo Keeper.

Recommendations have been made for filling these vacancies.

III WORK COMPLETED:

(a) Construction of Physical Improvements.

In construction work for the past month very little has been accomplished. During the first few days of the month a heavy snow hindered work, and on the 5th most of the crews were called in on account of the lack of funds to carry on any further work.

The contractors for the under-pass bridge near Sylvan Pass have done no work for the past month. Their crew disbanded the latter part of September, leaving the contract 60 per cent completed.

The small crew with pack train, under the direction of Assistant Chief Ranger Harry Trischman, built a new snow-shoe cabin at Park Point on the east shore of Yellowstone Lake, to replace the old one that had become too much dilapidated to be serviceable. This cabin is built of peeled logs, and consists of one room 12 x 16 feet in size. The floor, window shutters and door are made of two-inch plank; roof shingled. All lumber except shingles was salvaged from old tumble-down buildings near Lake Outlet, transported to the site by boat. On completion of this work, the crew was laid off and sent in to be paid off.

(b) Maintenance and Repair of Physical Improvements.

At Headquarters practically no improvements were made. Some improvements were made to the quarters occupied by Assistant Chief Ranger McBride. Two men were employed three days removing dangerous rock above the road in the Gardiner Canyon. Shop work consists of winter repairs to

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In the south forest reserve the camp doing road work completed the work on the $3\frac{1}{2}$ miles of road improvement in the vicinity of Pilgrim Creek on October 5, and arrived in Headquarters October 10.

The pile driving on the Fishing Bridge at the Lake Outlet was completed and the hand rail replaced. This same crew then cleared the timber and graded the new road along the lake shore at the Lake Hotel, arriving in Headquarters October 20.

Conohan's crew at the Canyon arrived in Headquarters October 5, leaving the Artist's Point road and the cribbing on the Inspiration Point road in fair condition for spring.

On the Mammoth to Norris road the graveling crew at Norris came in October 4. Gottrell's crew finished the work of improving 3 miles of road on the Swan Lake Flats and was called in October 17.

The Yellowstone Lake survey was discontinued the first of the month. Engineer Burney made a complete survey of the proposed road from Yellowstone to Grayling Creek along the west boundary. This survey was completed October 21 and was the last work done out in the park.

There are two engineers in the office working up field data and ^{index} managing the office map files.

(c) Miscellaneous Improvement Work.

Assistant Chief Ranger Harry Trischman repaired the snowshoe cabin at Cabih Creek and Thorofare Creek, in the southeast corner of the park. The windows were furnished with two-inch plank shutters, and new doors were made of the same material.

The hay crew at Gardiner finally finished putting up the oat hay there, begun Sept. 8, on October 17. A total of 93 tons were cut and stacked.

The fence crew at the Buffalo Farm was laid off on October 23, having completed in all the rebuilding of about $4\frac{1}{4}$ miles of pasture fence, rebuilding corrals, chutes and squeeze, and assisting in vaccinating the buffalo.

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Two teams with drivers were employed at the buffalo farm up to October 23 in seeding meadow land that had previously been plowed and cultivated. About 150 acres were seeded, but only about 100 acres were disced in, as the storm came on and rendered it impracticable to cultivate the soil.

The crew on Slough Creek built pole fences around the haystacks, and built a small cabin for the use of the teamster employed to care for the herd of horses to be wintered there.

The mess house at Headquarters was discontinued on October 15, as there was no further use for it after all of the construction crews had been laid off.

The annual report for the year was finished and transmitted to the Service.

Improvements by concessioners.

The Yellowstone Park Camping Company, Howard H. Hays, General Manager. This company continued construction work on its new buildings at the Lake Camp and before the end of the month had succeeded in closing in the new central building, despite the stormy weather. A fine new fire-place was constructed in the north end of the building. It was the purpose of the Camping Company to continue the interior finishing of this new building, but the deep snows made the transportation of material so difficult and costly that the crews were withdrawn at the end of the month.

With John A. Evans, formerly foreman of our road maintenance crew in the south forest, in charge, work was begun about the middle of the month on the new central building for the Roosevelt Camp at Tower Falls. Between the time of beginning this work and the end of the month the crew of men under Evans was engaged in getting out logs and clearing the site for the new building. Plans and specifications for this structure will be submitted at an early date. It is proposed to make this camp something on the order of the " dude ranch " of the West. A big log building will constitute the central unit and contain dining room, kitchen, and lobby or lounging room. Small log cabins will be placed about the central structure. The camp will be made headquarters for fishing parties, tourists desiring to take long and short saddle-horse trips, etcetera.

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No improvements were undertaken in the Mammoth Camp, but plans were considered for the establishment of a bathing pool at this camp and tentative arrangements were made for the rearrangement of the camp during the winter months. The camp was used as a base of supplies for the construction crews at Lake and Roosevelt Camps.

The camping company was handicapped seriously by the big storm, several of its trucks loaded with material, equipment, and supplies, being caught in the snow. Within a week after the storm broke Mr. Hays succeeded in clearing the road from the Lake Camp to the Grand Canyon, and in co-operation with the hotel company finally broke the road through to Mammoth Hot Springs. This made it possible to rescue some of the motor equipment caught in the snow, but before all of it could be brought in strong winds drifted the snow into the cleared road and additional snow finally made the road impassable again and compelled recourse to horse-drawn sleds for the work of transporting supplies and men.

The Yellowstone Park Hotel Company. During the month the Yellowstone Park Hotel Company continued work on its new dormitory for girls back of the Canyon Hotel. When the big storm broke on the night of October 22 the first and second floors were in place and the studding for the third floor was in course of erection. The great depth of snow and continued cold weather prevented much work being done on the building for a week, but at the end of the month it was possible to resume work and it is hoped that the building will be placed under cover before the crews have to be withdrawn for the winter. The freighting of lumber for this structure was a very difficult matter for the company to handle and it looked for a time as if all work would have to be abandoned on this building. In pouring the concrete for the foundation of this structure part of the material froze, but the foundation was so well reinforced that it is doubtful whether the freezing will in any way affect it.

No work was undertaken on the new dormitory which the company proposes to build in the rear of the Old Faithful Inn at Upper Geyser Basin.

Likewise it was not possible for the company to undertake the improvements that it contemplates making in the Lake Hotel.

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Yellowstone Park Transportation Company. In the course of the month this company undertook the improvement of some of the buildings in its plant at Mammoth Hot Springs. One of its big storage garages is being improved by the removal of unsightly cornice and lath and stucco work on the sides, which has become very much dilapidated. Shingles will replace the stucco and it is proposed to paint the exterior of the entire building.

The old stables of the company near the north boundary were remodeled for use as storage barns for abandoned coaches which the company had to take from its Mammoth Hot Springs buildings in order to make room for automobiles.

Early in the month the company began the painting of its motor equipment, and in order to facilitate this work I gave its officers permission to use the paint shop formerly utilized by the Engineer Department when it was in charge of road work in the park. My inspection of the cars as they were turned out of the paint shop indicates that they were being well painted, but from all appearances they are receiving a very superficial over-hauling in the machine shop. It is unfortunate that the company should not seek to put its cars in better condition for the opening of next season. I anticipate that much trouble will be experienced through defective mechanism of the cars unless more care is taken in repairing them.

The transportation company proposes to erect new gasoline and oil filling stations at Upper Geyser Basin, Lake, and Canyon, but it was unable to begin work this fall. These stations will have to be built in the early spring, as soon as material and men can be transported to the upper park.

George Whittaker. Mr. Whittaker continued the construction of his new store at Grand Canyon. In late September Landscape Engineer Funchard and I approved the site for this store near Canyon Junction; that is, the point where the road from Norris Basin joins the main loop system. The new site is near the location of the old "Tex" Holm's buildings, which Mr. Whittaker has been using for the past two years. As soon as the site was selected I permitted Mr. Whittaker to clear away trees and stumps and lay the concrete foundation for the new structure. I inspected the site on October 16 and found that the clearing had been done in a very satisfactory manner. Plans for the new store have been forwarded

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to Landscape Engineer Funchard, in order that he may note his approval on them. After they are returned to me I will forward them to the Service with indication of my approval. These plans contemplate the construction of a large log building of attractive design, conceived by Architect C. Hewes Kirk of Helena, Montana.

Trees were spotted for Mr. Whittaker by Chief Ranger McBride, and he is engaged in cutting and hauling these logs to the site of his new building at the present time. The storm has interfered somewhat with this work, but Mr. Whittaker, who is an old-timer in the park, expects to be able to get his new building under roof before he has to withdraw his crew for the winter. The new building, when completed, will cost in the neighborhood of \$8,000 and will be a distinct credit to the park. One of the new filling stations of the Yellowstone Park Transportation Company will be erected immediately east of the new store.

C. A. Hamilton. During the month Mr. Hamilton continued the construction of his new store at the Lake Outlet, in accordance with plans already approved by the Service. He had to contend with a good many labor troubles, and the big storm brought new difficulties in the way of transportation of equipment and supplies. He bravely continued his work until the end of the month, when he advised me that he would have to bring in his crews and stop work for the winter. He was unable to get his building under roof, but with anything like favorable spring conditions he will probably be able to finish the store and have it ready for use shortly after the opening of the season.

(d) Service to the Public.

As the park season was over the latter part of September, travel for October consisted of a few parties traveling with their own transportation, most of them provided with their own camping outfits or simply passing through from one entrance to another on hunting trips. A few secured accommodations with the winter keepers at hotels, or with construction crews at hotels and camps. Most of the 40 automobiles entering at Gardiner were local people making short trips on business. The total travel as shown by the inclosed copy of the Chief Ranger's Report was as follows:

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West	3	21
South	2	4
East	—	—
North	49	162
Totals	54	187

IV. WORK IN PROGRESS.

Besides the improvement work being carried on by the business interests of the park as stated above, the park administration was engaged until the end of the month in endeavoring to extricate its motor equipment from the snow, and in rationing ranger stations for the winter.

In the office plans were carried out for placing the park on a winter basis, and every effort was made to expedite the settlement of accounts. The storekeeper and cost clerk was engaged in bringing the cost data up to date, and preparing reports for the last half of the fiscal year ended June 30, 1919.

In the machine shops and garage work of repairing machines, tools, equipment, and motor vehicles was continued.

V. WORK DONE.

As indicated in another part of this report, it was necessary to begin feeding hay to the elk during the last days of the month, in order to stop the migration of the herds from the park to the mountainous region northward,, where they were sure to be slaughtered.

The work of patrolling the park line to prevent trespass by hunters and poachers was begun by the ranger force prior to October 1st and 15th, the opening dates of the hunting season in Wyoming and Montana respectively.

VI. PLANS OR PROPOSED WORK.

During the month of November it is proposed to remodel the large wooden stable immediately south of the stone stable which was converted last year into a machine shop and garage. This big structure will be used hereafter for the

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storage of vehicles and road equipment which are now stored in different buildings about Mammoth Hot Springs. Doors will be placed on the west side of the building, in order that better access to the structure may be had.

The three ice houses now used by the Yellowstone Park Hotel Company, the Yellowstone Park Camping Company, and the National Park Service, respectively, are located in close proximity to the Mammoth Camp and are very unsightly. It is proposed to wreck these buildings, salvaging the lumber for future use, and then remodeling one of the old warehouses at Fort Yellowstone for the purpose of providing adequate storage facilities for ice. The work of remodeling this building will be undertaken by the Yellowstone Park Hotel Company and the Yellowstone Park Camping Company, in return for the use of two-thirds of the new facilities. The other third of the new ice storage plant will be used by our Service.

It is also proposed to move the commissary and surplus supplies now housed in buildings formerly used by the Engineer Department to the old Post Commissary and warehouse of Fort Yellowstone. The latter buildings are better adapted for our purposes, are warmer, and really much easier to take care of. This change will also enable us to concentrate all of our equipment and supplies where they can be more economically handled and where they can be more accessible to transportation facilities when it is necessary to move them into the upper park.

Plans have been made for taking an inventory of all the useful and nonexpendable property, and likewise it is proposed to take a similar inventory of property that can not be used. After the latter inventory is made the material that should be condemned will be segregated from material that might be shipped to other parks, and when the material not needed here that is still useful has been finally ascertained, lists will be sent to the Service with the recommendation that the other parks be circularized for the purpose of ascertaining what portion of this material they can use.

As soon as possible, it is proposed to allow Rangers Court Dewing and Henry Anderson to place their string of traps in order that they may catch as many predatory animals as possible. These two men are experts in trapping.

During the month Ranger Anderson will ration a

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number of snowshoe cabins.

It is proposed to continue feeding enough hay to the elk herds to keep them within the park boundaries and to take every other step necessary to protect these animals. Further efforts will be made to purchase additional quantities of hay.

VII. POLICIES.

New policies inaugurated during the month include the prohibition of the movement of hunting parties over the trails of the park. The order covering this policy provides that hunting parties may cross the park on the main roads, provided their guns are sealed at the gate used in entering, and in case game meat should be procured the order provides that it must be wrapped and sealed when brought into the park.

Another policy inaugurated provides that no game meat shall be brought into the park for consumption here.

VIII. COST OF OPERATION.

It is not possible to give the cost of operating the park during the month of October, but it is expected that hereafter early in the month the costs of the preceding months operations will be available.

It may be stated, however, that during the month of October very little money was spent outside of the salaries of the administrative and protective forces. The suspension of improvement work in the early part of the month practically placed the park on a winter basis of operation.

IX. OTHER MATTERS OF INTEREST.

Wild animals.

In general the wild animals were in excellent condition. But the heavy snowstorm of October 22 and 23, followed by low temperatures, brought the elk, deer, antelope and mountain sheep down to the lower levels looking for forage, and a large number of the elk went outside where they were an easy prey for hunters.

This brought the elk down so suddenly that our plan to hold a large herd of them on Slough Creek and feed

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them there for the winter miscarried, as they are not apt to return after once coming down, until spring. But with the present prospects for a hard winter, it is almost sure that we shall need this hay before spring for our surplus horses and the tame buffalo herd, and efforts are being made to secure funds for purchase of more for feeding the elk. This necessary change in plans leaves us but 689 tons of hay available for feeding wild animals, instead of 870 tons reported last month. Strenuous efforts are being made to procure 300 to 400 tons additional.

Buffalo, wild herd. No report was received of the wild herd which ranges mostly around Saddle Mountain and in Pelican Valley. Tracks of one old bull that ranges on the Upper Yellowstone by himself were seen.

Buffalo, tame herd. This herd was rounded up to be vaccinated for hemorrhagic septicemia on October 7 and the actual vaccination occurred on the 8th and 9th, the second vaccination about ten days later. The Bureau of Animal Industry furnished the vaccine, and sent two of their veterinarians - Doctor Plank and Doctor Wallman - from the Helena, Montana, office, to do the work. Of the total herd, 355 were vaccinated. Of these 90 were calves. During the process of vaccination 5 calves and one old cow were injured in handling to the extent that they died later. Losses of this sort are unavoidable, as the handling of a herd of bison is at the best a very rough and dangerous proposition. One calf has been born since the herd was vaccinated. The total number born this season is therefore 91, of which 52 were males and 39 females. Of these 2 males and 3 females were killed in process of vaccination, leaving 50 males and 36 females at the present time. Of the remaining 50 males, 30 were castrated, at the time of the second vaccination. The total number in the herd at the present time is 414.

Bears. Bears continued to give considerable trouble up to the time of the storm, October 22 and 23, when they evidently were driven permanently into winter quarters, as no complaints have been heard since.

Among other depredations during the month was the stealing of a ham from our commissary storehouse. A single pane of glass was broken from a window sash, and from the fresh tracks in the soft mud it was evident that the visitors consisted of a mother black bear and one or two cubs. Also

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that after breaking the pane of glass the mother sent one of the cubs inside while she remained on guard outside. The little fellow stole a ham that laid on the counter and got away with it, but was unsuccessful in getting inside of the salt meat room, which is protected by a wire screen supported by slats. The following evening they attempted to repeat the occurrence, but the little bear apparently was frightened away after he had loosened three of the slats at one end but had not succeeded in getting through the wire screen to the meat.

Antelope. The storms drove the antelope down to the Gardiner flats ahead of time, and they have been uneasy and anxious to get through the fence to lower levels ever since the heavy snow came. The fence is patrolled every day and a careful watch kept to repair any small hole underneath which might let them through. Even at this a few (about 25) are outside, but as they are absolutely protected in Montana, and also from the fact that they are west of the Yellowstone River which is a state game preserve, they have not been molested, and will be returned to the park as soon as possible. Park Ranger A. L. McLaughlin who patrols this part of the north line daily reports about 350 head of antelope in the herd at present.

Deer. But few deer have been seen compared with former years, and reports indicate that quite a number of them wander outside of the park, where they are an easy prey to hunters as they are very tame in the park. I have heard of about a dozen having been killed to the present date, but doubtless they have been many more than this taken since the open season begun in Montana on October 1.

Elk. The storms of the month already referred to placed the elk herds of Yellowstone National Park in the gravest peril. As explained in previous reports, the grass on the ranges of the park was stunted and burned during the past summer when the weather was warm and there was absolutely no rain. As predicted, this poor condition of the range caused the elk to work down from the mountains earlier than usual. In late September it began to storm, and the one or two snow storms that preceded the big storm which began on October 22 tended to accelerate the downward movement of the elk. The big storm covered all of the ranges deep with snow and caused the northern herd to drift rapidly toward the north boundary, while the herds south and southwest of the Continental Divide moved quickly into the Jackson Hole. Assistant Chief Ranger Trischman reports that in the course of a comparatively few

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Across the Thoroughfare region and the Upper Yellowstone were cleared of elk, the herds moving rapidly northward to the vicinity of Pelican Creek and thence over into the Lamar River region. Within a very few days after the big storm the elk herds were observed moving into the Crevice Gulch district, and on the west side of the Yellowstone River into what is known as the Turkey Pen region.

On October 28 several hundred head of elk had left the park, most of them going out in the vicinity of Crevice Gulch. Many of them were killed immediately upon leaving the park boundary. Acting Chief Ranger McBride reports that there are now approximately 3,000 head on Crevice Creek which will probably leave the park in the early future. Every effort is being made, however, to hold these animals back, and it may be possible to hold them in the park for some weeks.

Before the end of the month at least two large herds left the park at the mouth of Bear Creek, only about two miles east of Gardiner. These animals came down the west side of the Yellowstone River along the Turkey Pen Trail. In order to stop the drifting of the elk out of the park at this point the feeding of hay was begun.

Meanwhile hunters from all over the State of Montana came to Gardiner by train and the slaughter of the elk that unfortunately drifted out of the park was almost too horrible to relate. There was little sport in the hunting of the animals as they drifted from the park in herds and were as tame as domestic cattle. The noble animals were shot down almost the moment they left the park line in many cases, but the worst part of the wholesale butchery was the wounding of many animals that were not afterwards killed. These crippled creatures are bound to die in the snow. During the last week of the month from twenty to a hundred elk were placed on the park branch of the Northern Pacific Railroad each day, the platforms of the stations at Gardiner and Corwin Springs being loaded with dead animals, by the time the train arrived from Livingston. It is reported that one day there were so many elk ready for shipment that there was not sufficient space available in the cars to handle them and that the meat of approximately forty dead animals spoiled.

The worst feature of this drift of the elk is that all of the animals that are not killed will probably starve to death, as there is absolutely no feed for them in the forest north of the park. The range in the Absaroka National

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Forest was almost destroyed during the summer drought, and what little grass was not burned was eaten by sheep and cattle. The elk that left the park must, therefore, continue drifting northward over the barren ground, and reports coming in during the past few days are to the effect that the animals have already reached a point approximately half way between Gardiner and Livingston -- that is, between 25 and 30 miles north of the park. I anticipate that people will be riding out from Livingston in automobiles before Christmas and shooting the elk from their cars. The hunting season in Park County does not close until December 25.

The Forest Service is without money to provide the necessary patrols for the purpose of protecting the elk in the Absaroka National Forest, but it has its regular rangers on duty. I noted, however, that the supervisor of the forest and his rangers were among the first to kill elk, and while in Gardiner recently one of the forest rangers advised me that he had come down to pay \$25.00 for a license to kill a second elk. The Montana law provides that upon the payment of \$25.00 an extra license may be procured which will entitle a hunter to a second elk. I likewise observed that the Montana game wardens were among the first to come to Gardiner for the purpose of killing elk and deer.

In conversations with the game wardens and various people, they indicated a great interest in the preservation of the herds, but could not see how they could do anything. They all stated that it is up to the National Park Service to save the elk if anything at all is to be done.

State Game Warden J. L. DeHart took up headquarters at Gardiner for the purpose of observing conditions, and has already advised me that he is favorable to securing State legislation cutting down the hunting season and giving more protection to the elk in the vicinity of the north boundary of the park. What his detailed recommendations will be I can not say.

It is probable that between 1,000 and 1,500 head of elk had left the park by November 1. The feeding of hay may result in keeping several thousand elk within the park boundary, but much depends upon weather conditions.

I have no information as to what has happened to the southern herds, but it is a safe guess that they are being slaughtered in the Jackson Hole. The Biological Survey, how-

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ever, will be able to save the nucleus of the herd with the hay that it has accumulated at its farm.

There is a possibility, however, that we may lose all of the animals. I repeat, the elk are facing the most serious winter in the history of the park.

I have asked the Service to arrange for making available more funds for the purchase of additional stocks of hay, and as this is written information comes that not exceeding 430 tons may be purchased if this seems advisable. It is a question now whether any more hay can be purchased in this neighborhood, but every effort will be made to secure sufficient hay to tide over the elk herds that we may be able to keep within the boundaries of the park.

It has just been discovered by our rangers that tooth hunting has been going on in the Gallatin National Forest, and according to the newspapers this tooth hunting is also being carried on in other parts of Montana.

Mountain Sheep. The usual herd of mountain sheep came down to Gardiner Canyon after the storm, and are seen daily along the road. They have also been seen in Golden Gate Canyon, 4 miles south of Headquarters. On October 20 a male lamb came to the tent occupied by two laborers who were plowing land for meadows on Lamar River about 3 miles south of the buffalo farm, and entered the tent without any apparent fear. He was a healthy looking specimen, but in poor flesh. The buffalo keeper took him to the ranch and fed him milk, bread, etc., but he finally died.

Moose. An occasional moose was seen during the month by rangers on patrol. Assistant Chief Ranger Harry Trischman reports seeing many of them in the Upper Yellowstone country in the southeast corner of the park.

Carnivorous animals. No one had the time to make a business of hunting during the month, but three coyotes were killed in connection with other duties.

Grazing.

While the grazing was not as good as usual, it was even better than it is outside of the park, and an effort was made to hold as many elk as practicable within the boundaries of the park after the big storm occurred which naturally has a

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tendency to force the game down to lower levels.

Domestic cattle or horses were not grazed to any extent in the park during the month. The Taylor Park Cattle Company was permitted to take its herd of 700 to 750 cattle from its summer grazing ground on Madison River, through the park over the Gallatin County road, to the winter quarters on West Gallatin, on October 12 and 13.

Birds.

Most of the summer birds migrated from the park during the month, leaving the usual varieties that remain all winter, such as a few ducks, Clark's nut crackers, owls, etc.

Fish.

Fishing was fairly good in Madison River, near the western entrance, up to the time of the storm, although not as good as usual in the fall, due to the fact that the water was lower in the streams and the trout did not go up so high to spawn.

Protection of game.

The open season for big game, (opened for elk in Montana on October 15 and in Wyoming on October 1; for deer in Montana on October 1 and in Wyoming November 1. While it lasts in Wyoming for both elk and deer until November 30, the heavy snowfall stopped all hunting near the park lines, or that would naturally have to travel through the park. But the season in Park County, Montana, which lies just north of the park, lasts to December 25, and will be accessible for hunters until that time.

Since October 1 special patrols have been maintained at all points where there was danger of hunters getting across the line, and this will be necessary on portions of the north line until the end of December.

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Arrests and violations of law.

The only arrests recorded during the month, with results of trial, were as follows:

On October 23 Acting Chief Ranger James McBride arrested Bert Gant, Robert Gant and R. J. Bush, all of Jardine, Montana, for hunting in the park. Robert Gant was discharged by the U. S. Commissioner. Bert Gant and R. J. Bush were each fined twenty-five dollars and half of the costs of the case.

On October 30 Ranger Henry Anderson arrested P. G. Gilkerson, of Bozeman, Montana, for shooting a gun inside of the park, or rather while he was inside the park. He was fined fifty dollars and costs of the case by the U. S. Commissioner.

Forest fires.

No forest fires were reported during the month.

Accidents and casualties.

No accidents were reported during the month.

Special visitors.

Walter C. White, of the White Company, automobile manufacturers, and Roe Emery, President, Glacier Park Transportation Company, in Cody 16th; out Gardiner 22d.

D. W. Hiner, Superintendent Caterpillar Tractors, State Highway Commission of Montana, October 1 to about 10. Officially, for inspecting motor tractor and trucks borrowed from State.

A. G. Lucier, International Film Service, October 7, to get movies of tame buffalo during process of vaccination. Authority October 13 to take movies in all parks from an aeroplane.

Doctors Wallman and Plank, Veterinarians, U. S. Bureau of Animal Industry, to vaccinate buffalo.

Ernest W. Shaw, Supervisor, Absaroka National Forest, at Gardiner, October 30.

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J. L. DeHart, State Game Warden of Montana, at Gardiner, October 31.

E. C. Howard, U. S. Geological Survey, Idaho Falls Office, in southwest corner of park October 15, and permitted by Ranger Little to measure flow of Fall River in the park.

Miscellaneous.

Church services were held in the chapel at Headquarters every Sunday, morning and evening, during the month.

War Savings Stamps to amount of \$268.28 were purchased by park employees during the month.

X. RECEIPTS AND REMITTANCES.

The usual report of monies collected, due and transmitted, together with money orders and checks totaling \$181.85, as called for by forms 10-59 and 10-60, is inclosed. Please acknowledge receipt.

Cordially yours,

WELDON H. ALDRIGHT

Superintendent.

The Director,
National Park Service,
Department of the Interior,
Washington, D. C.

Inclosures:

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